

Lexington Center Safety Improvements at Massachusetts Avenue / Woburn Street an Element of the Center Streetscape Project

Public Meeting
June 10, 2015



Project Limits



Project Goals

1. Improve safety for all modes of travel
2. Traffic Calming (Reduce Speed)
3. Bicycle accommodation throughout Project
4. No degradation of Level of Service (LOS)
5. No change in traffic patterns

Discussion Points

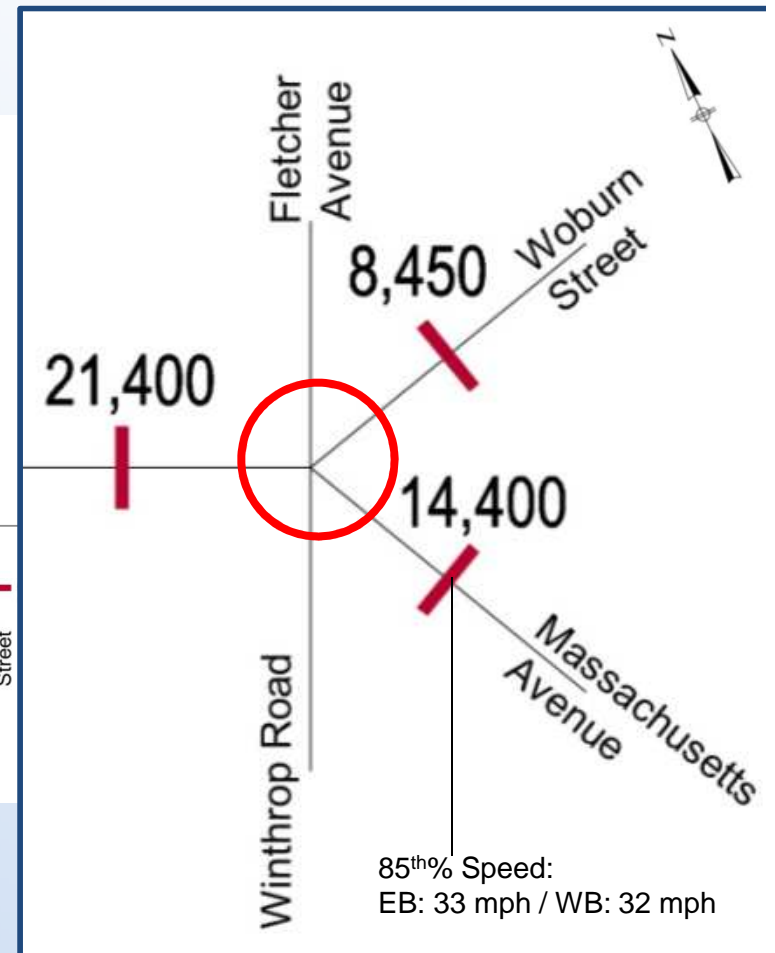
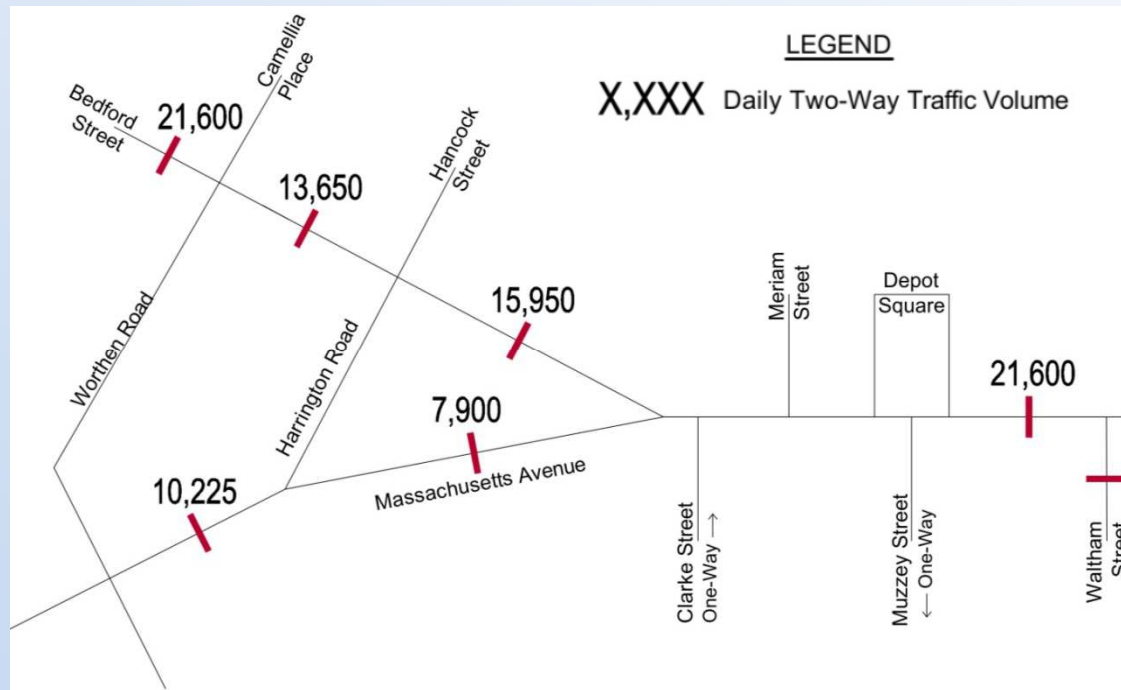
1. Traffic Data (Volume and Speed)
2. Existing Deficiencies
3. Accident/Safety Analysis
4. Traffic Signal Warrant Analysis
5. Improvement Option Evaluation



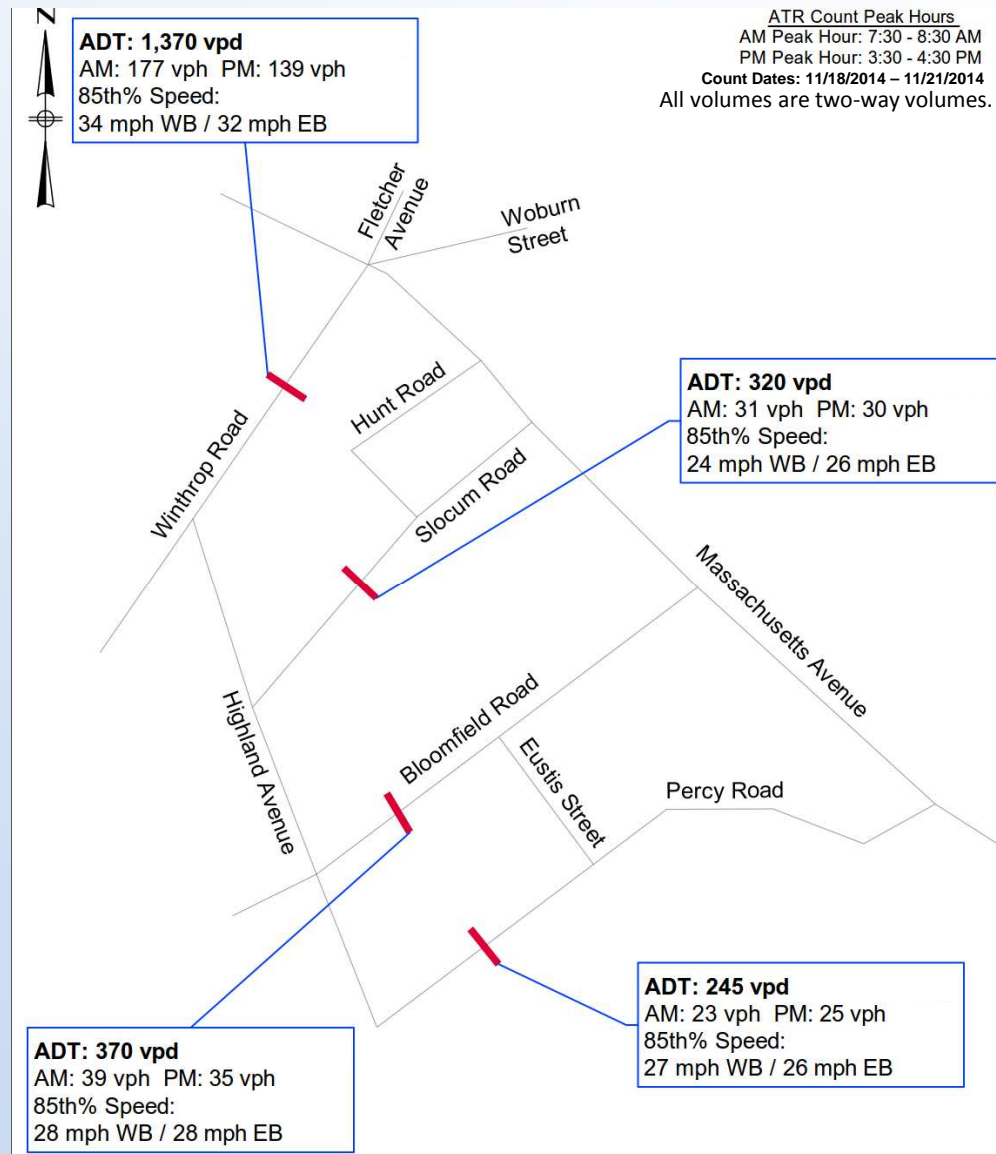
Traffic Data

1. Volume (vehicle, pedestrian, bicycle) and speed data
2. Additional volumes collected in the Winthrop Road Neighborhood
3. Special Events Observations

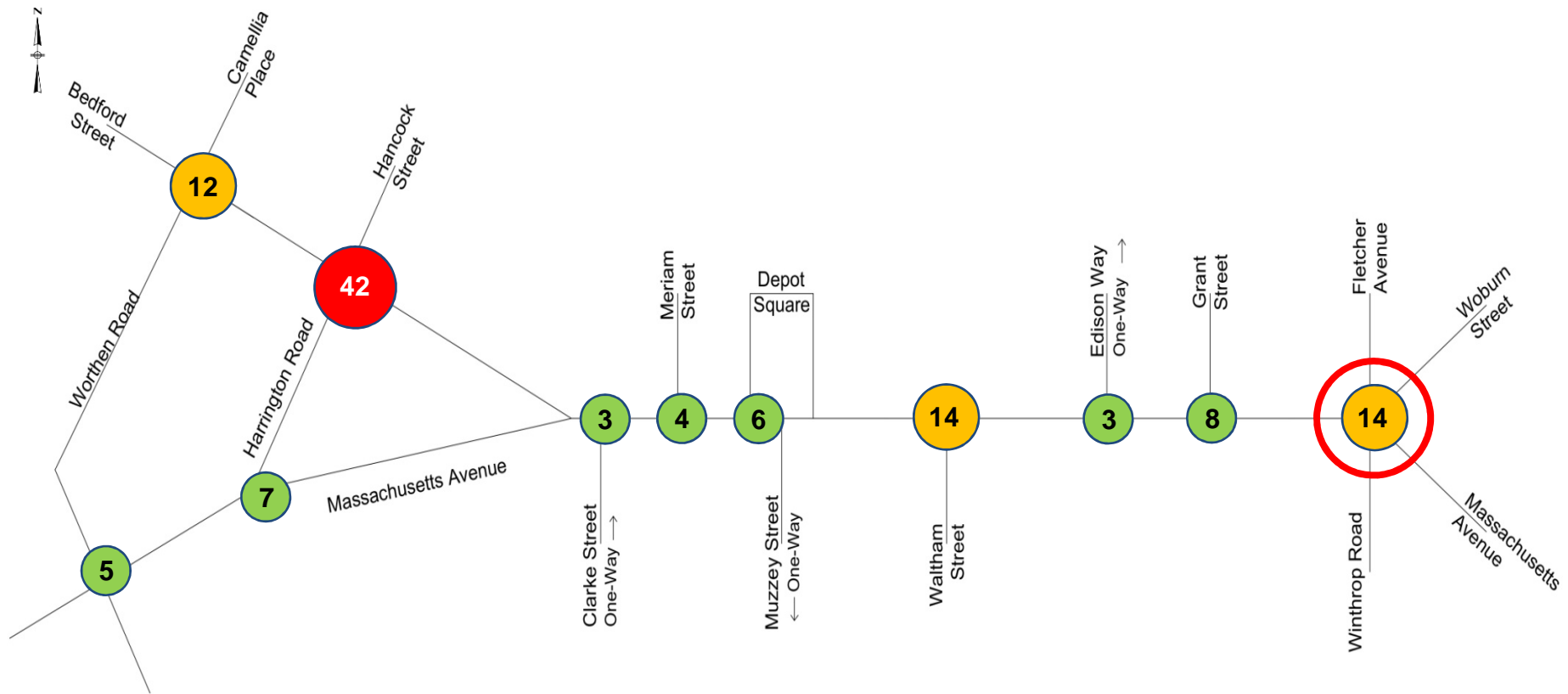
Existing Traffic Volumes



Winthrop Road Neighborhood Traffic Volume



Intersection Crash History (2008-2010)



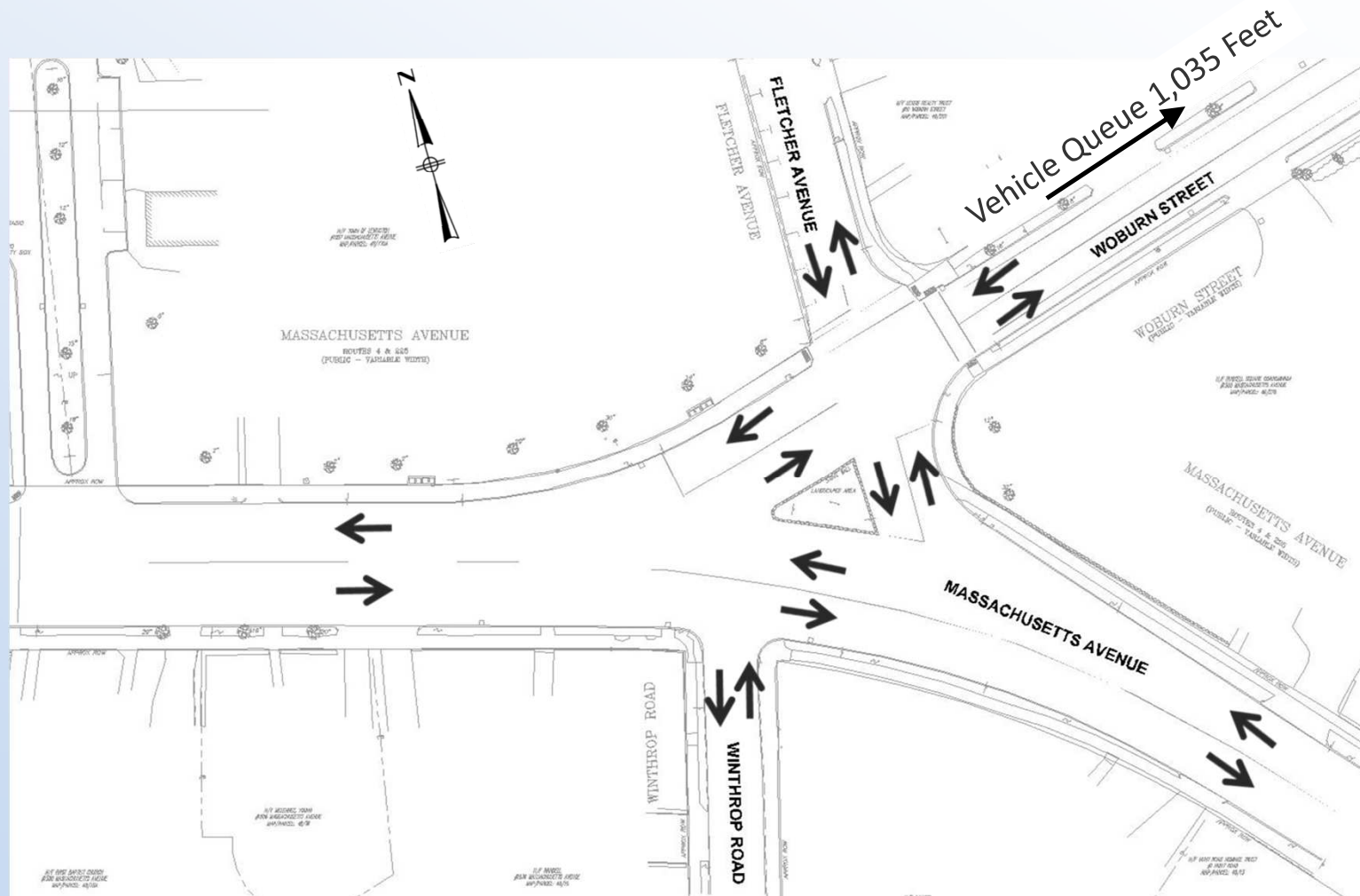
Crashes Within Entire Study Area = 196

Design Options

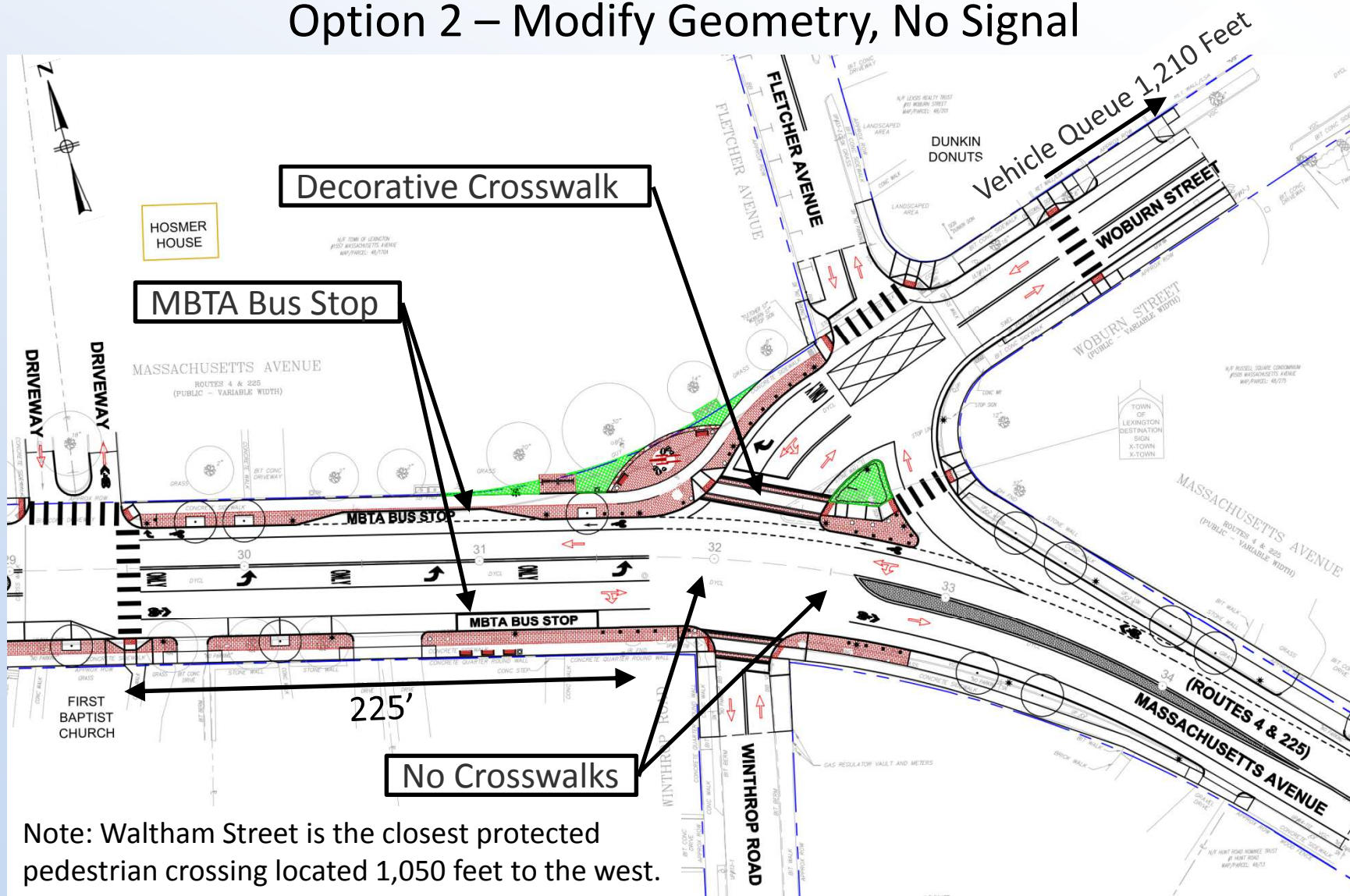
1. Maintain Existing Road Configuration
2. Modify Geometry, No Signal
3. Modify Geometry, Signal
4. Modify Geometry, HAWK (High-Intensity Activated CrossWalkS)
Signal
5. Modify Geometry, RRFB (Rectangular Rapid Flashing Beacon)
6. Roundabout
7. HAWK/RRFB at Existing Crosswalk (in front of First Baptist Church)

Massachusetts Avenue / Woburn Street / Winthrop Road

Option 1 – Maintain Existing Road Configuration



Option 2 – Modify Geometry, No Signal

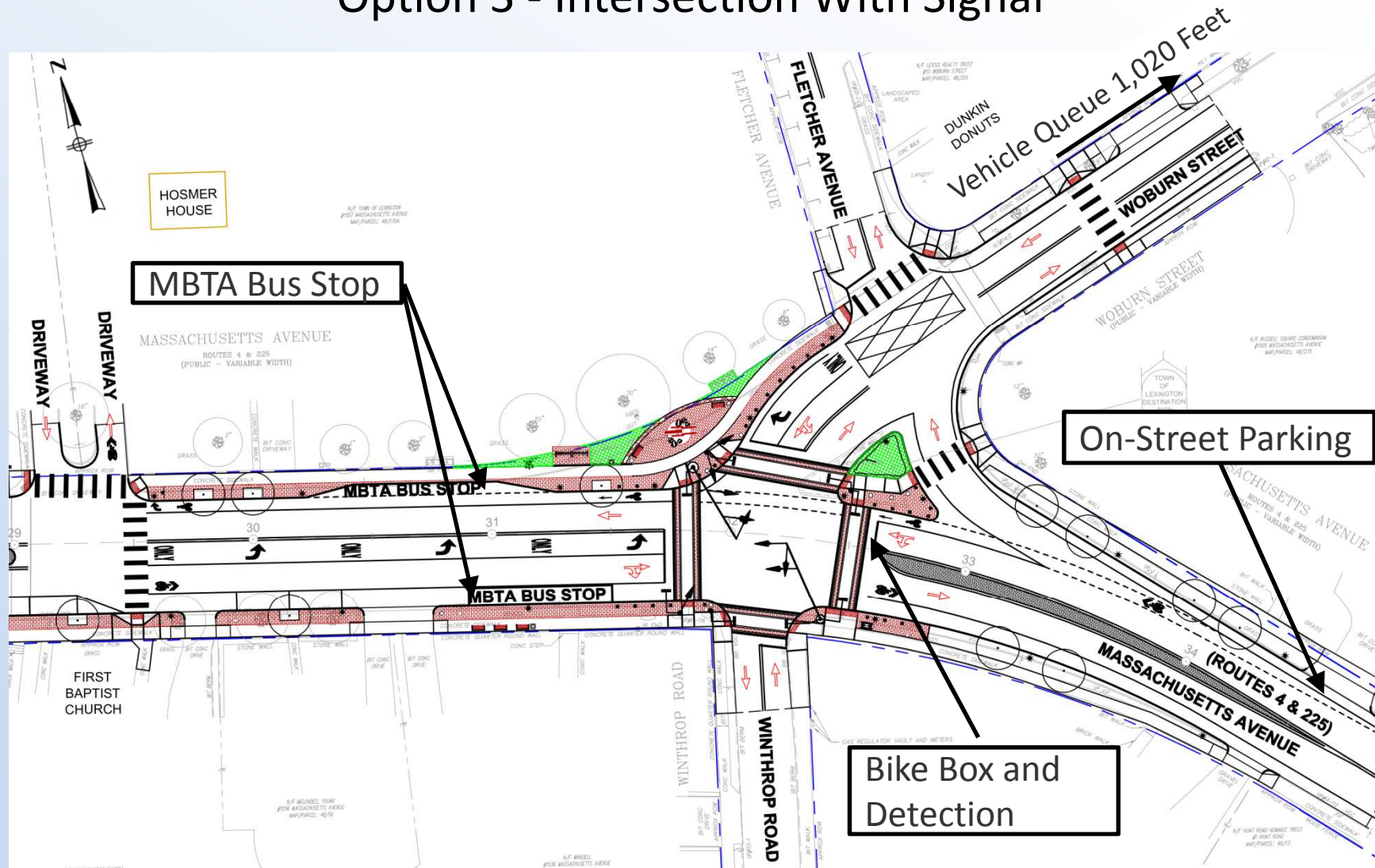


Note: Waltham Street is the closest protected pedestrian crossing located 1,050 feet to the west.



Massachusetts Avenue / Woburn Street / Winthrop Road

Option 3 - Intersection With Signal

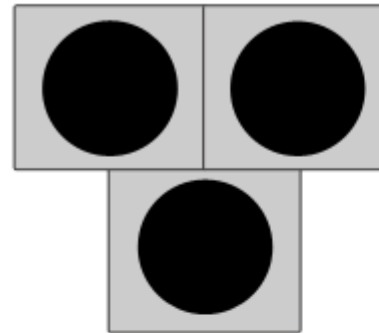


Massachusetts Avenue / Woburn Street / Winthrop Road

Option 4 – HAWK Signal (Not Applicable)



WHAT DRIVERS SEE

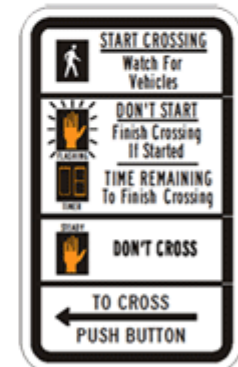


Dark

ACTION REQUIRED

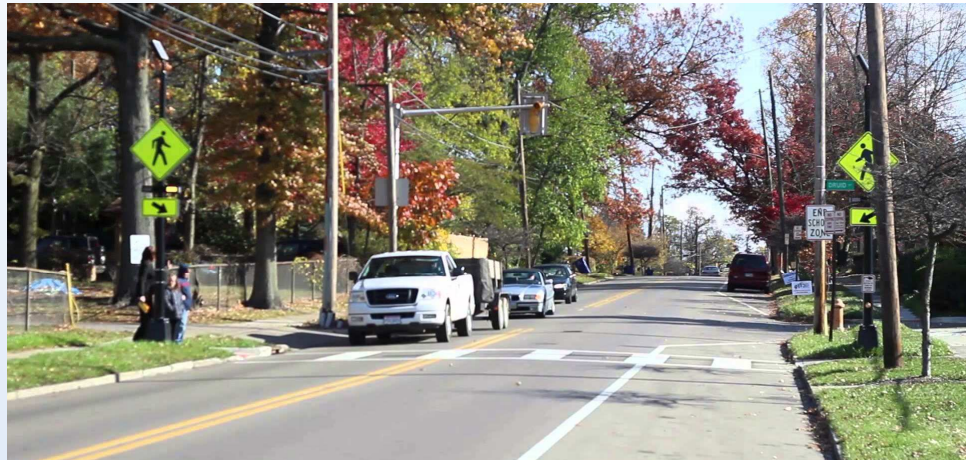
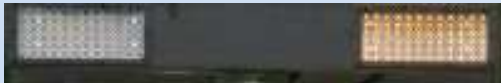
Proceed if no
Pedestrians in
Crosswalk

WHAT PEDESTRIANS SEE



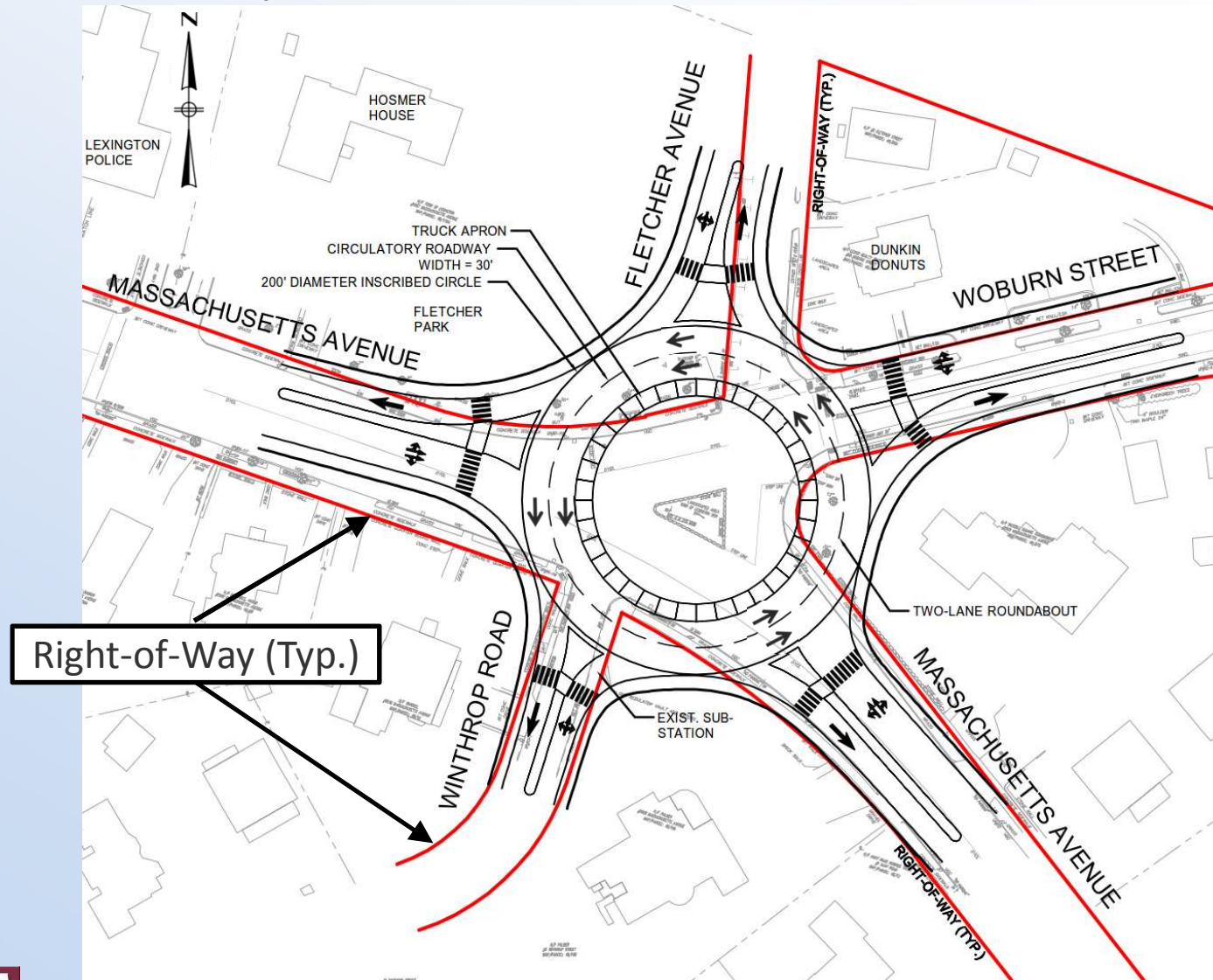
Massachusetts Avenue / Woburn Street / Winthrop Road

Option 5 – Rectangular Rapid Flashing Beacons (Not Applicable)



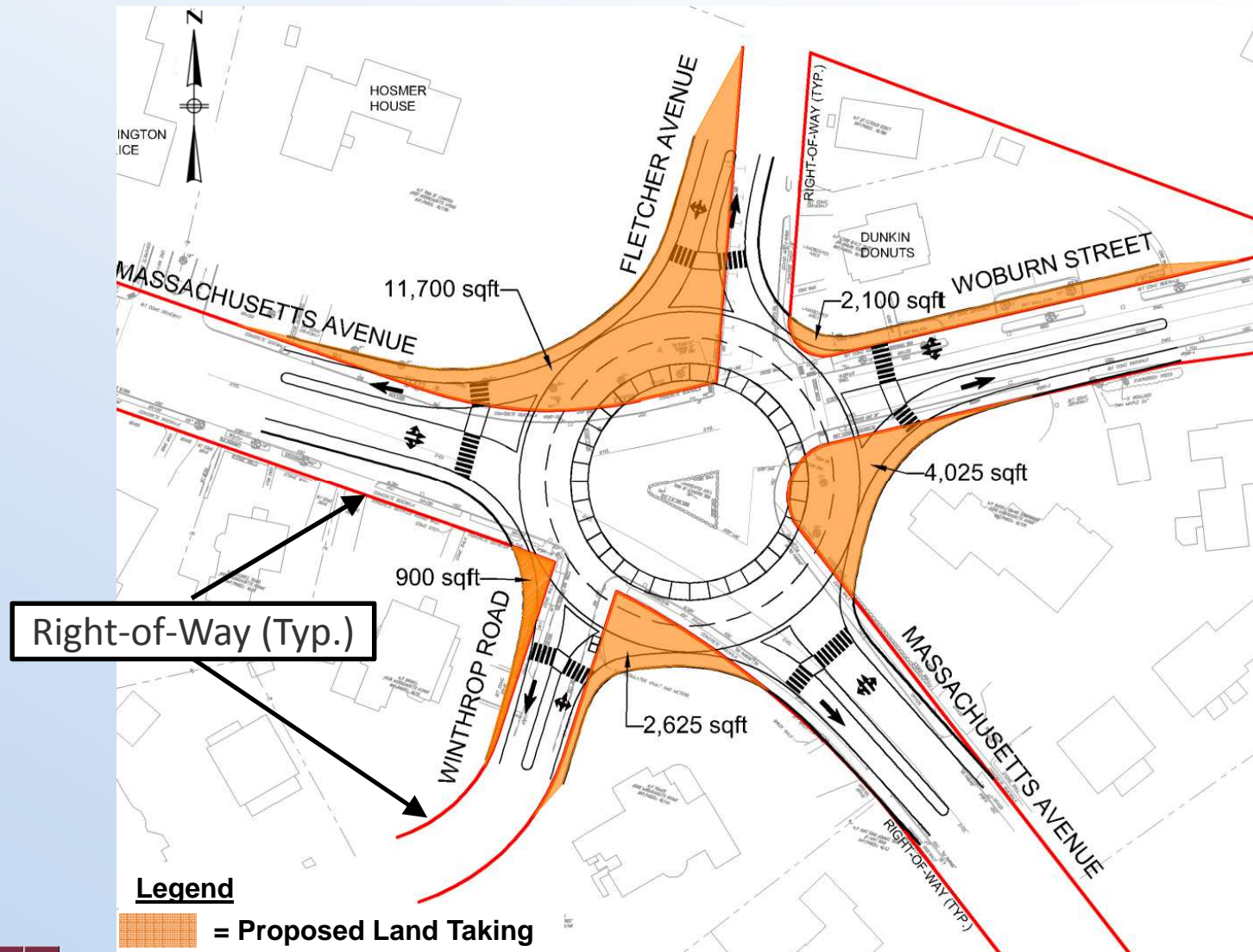
Massachusetts Avenue / Woburn Street / Winthrop Road

Option 6 - Intersection With Roundabout



Massachusetts Avenue / Woburn Street / Winthrop Road

Option 6 - Intersection With Roundabout



Traffic Analysis

Level of Service and Delays

Design Option	LOS	Delay (s)
Option 1: Maintain Existing Road Configuration	F	> 50 sec*
Option 2: Modify Geometry, No Signal	F	>> 50 sec*
Option 3: Modify Geometry, Signal	C	33 sec

Information reflects Woburn Street approach only.

* Approach experiences significant delay.



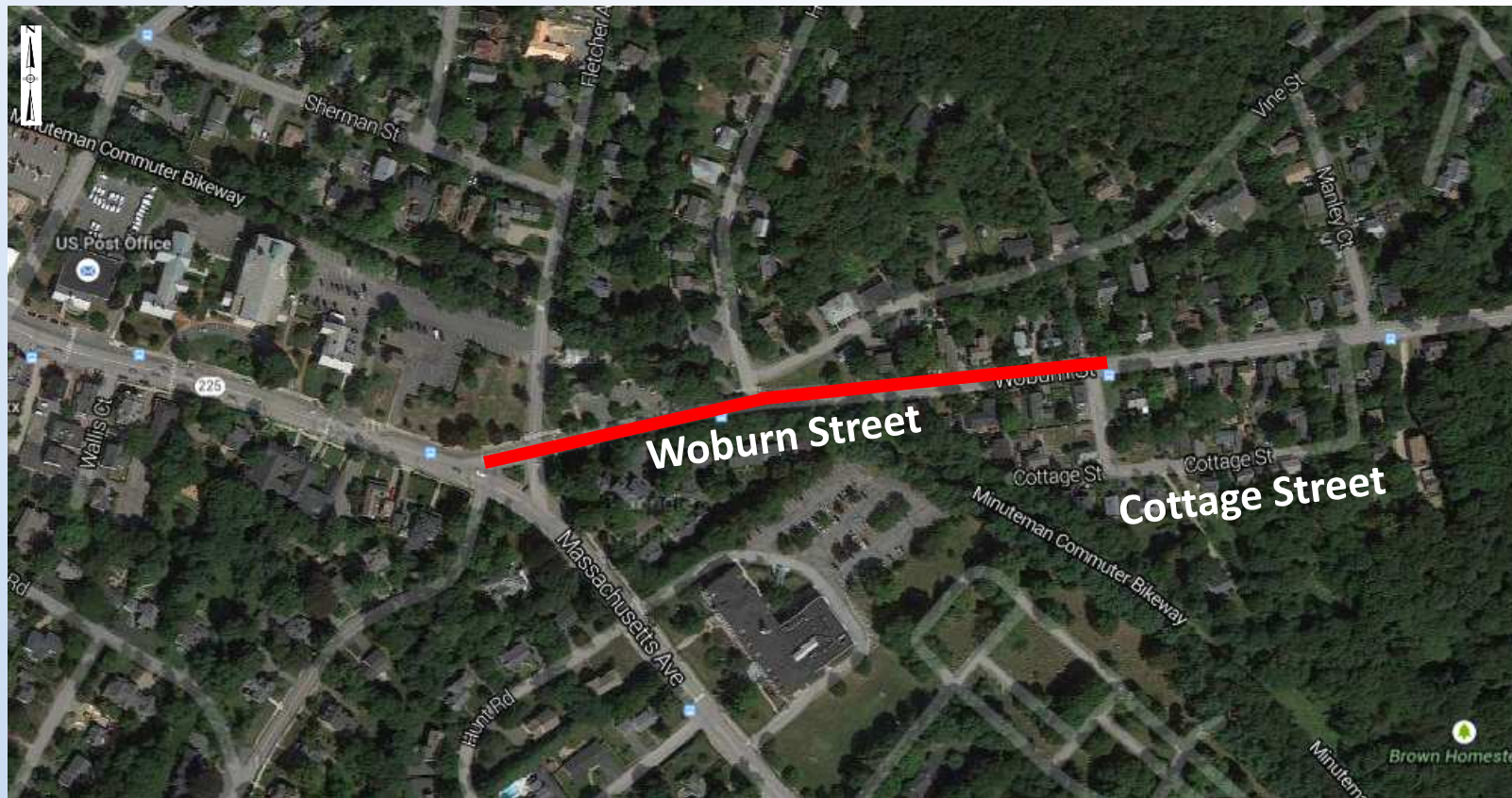
Existing Woburn Street Queues
At Fletcher Street



Existing Woburn Street Queues
At Minuteman Crossing

Traffic Analysis

Existing Queues



Existing Queue approx. 1,035 feet to Cottage Street.

Massachusetts Avenue / Woburn Street / Winthrop Road

Design Option Comparison

Design Option	Pros	Cons
Option 1 – Maintain Existing Road Configuration	<ul style="list-style-type: none"> • Maintains existing traffic movements • Maintains the existing island 	<ul style="list-style-type: none"> • Unsafe traffic patterns • No pedestrian or bicycle accommodation • Sight line restrictions • Queuing on Woburn Street (1,035 feet) • Poor Operation (LOS F) • Appearance/expansive pavement • No protection for bus stop pedestrians
Option 2 – Modify Geometry, No Signal	<ul style="list-style-type: none"> • Limited pedestrian accommodation • Bicycle accommodations • Improved traffic patterns/channelization • Sight line improvements • Traffic Calming 	<ul style="list-style-type: none"> • Pedestrian crosswalk unprotected • No protection for bus stop pedestrians • Increased traffic queues on Woburn Street (1,210 feet) • Poor operation (LOSF)
Option 3 – Modify Geometry, Traffic Signal	<ul style="list-style-type: none"> • Enhanced gateway to Town Center • Protected full pedestrian/bicycle accommodations • Meets MUTCD Warrants • Improved traffic safety/operations • Manage On-Demand vehicle/pedestrian traffic for both main and side streets • Protects bus stop pedestrian traffic • Traffic calming benefits • Manage Mass. Ave. Traffic • Manage Winthrop Road traffic 	<ul style="list-style-type: none"> • Installation and maintenance of traffic signals • Queuing on Woburn Street (1,020 feet)



Massachusetts Avenue / Woburn Street / Winthrop Road

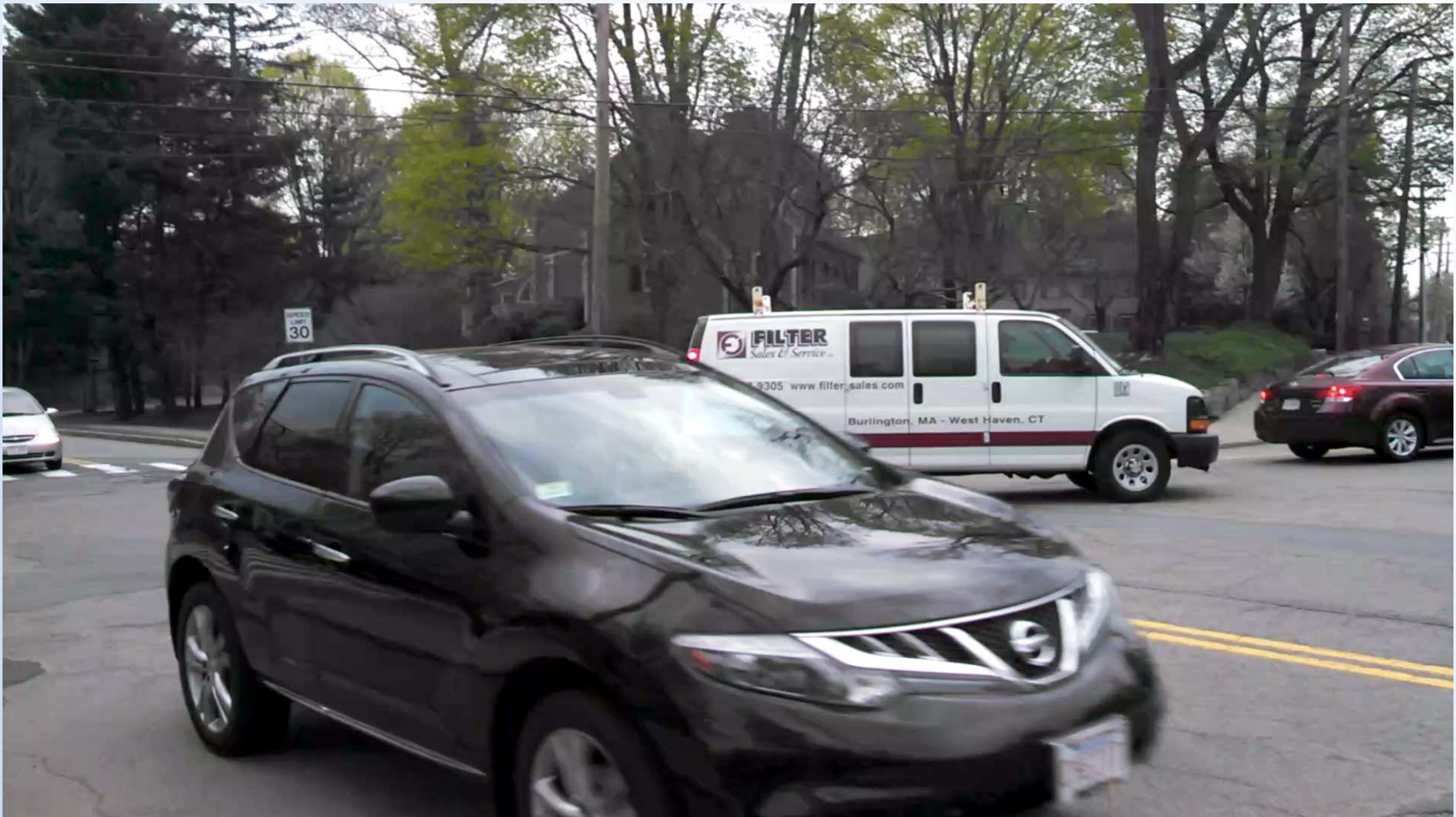
Design Option Comparison

Design Option	Pros	Cons
Option 4 – Modify Geometry, HAWK Signal	<ul style="list-style-type: none"> Not Applicable 	<ul style="list-style-type: none"> Not Applicable Does not meet MUTCD warrants Recommended for mid-block crossings only
Option 5 – Modify Geometry, RRFB	<ul style="list-style-type: none"> Not Applicable 	<ul style="list-style-type: none"> Not Applicable MUTCD prohibits use of RRFB's at crosswalks controlled by YIELD signs, STOP signs, or traffic signals. Roundabouts are exempt.
Option 6 – Roundabout	<ul style="list-style-type: none"> Controls traffic without the use of traffic signals 	<ul style="list-style-type: none"> Requires extensive Right-of-Way Volume requires a 2-Lane roundabout Topographical issues
Option 7 – HAWK/RRFB at First Baptist Church Crosswalk	<ul style="list-style-type: none"> RRFB - Possible/Not Recommended HAWK - Not Applicable 	<ul style="list-style-type: none"> Not Applicable Close proximity (225') to the intersection Lack of on-demand coordination for vehicles

Thank you!

Traffic Analysis

Video – Existing Queue Conditions



Massachusetts Avenue / Woburn Street / Winthrop Road

Viable Design Option Comparison Summary

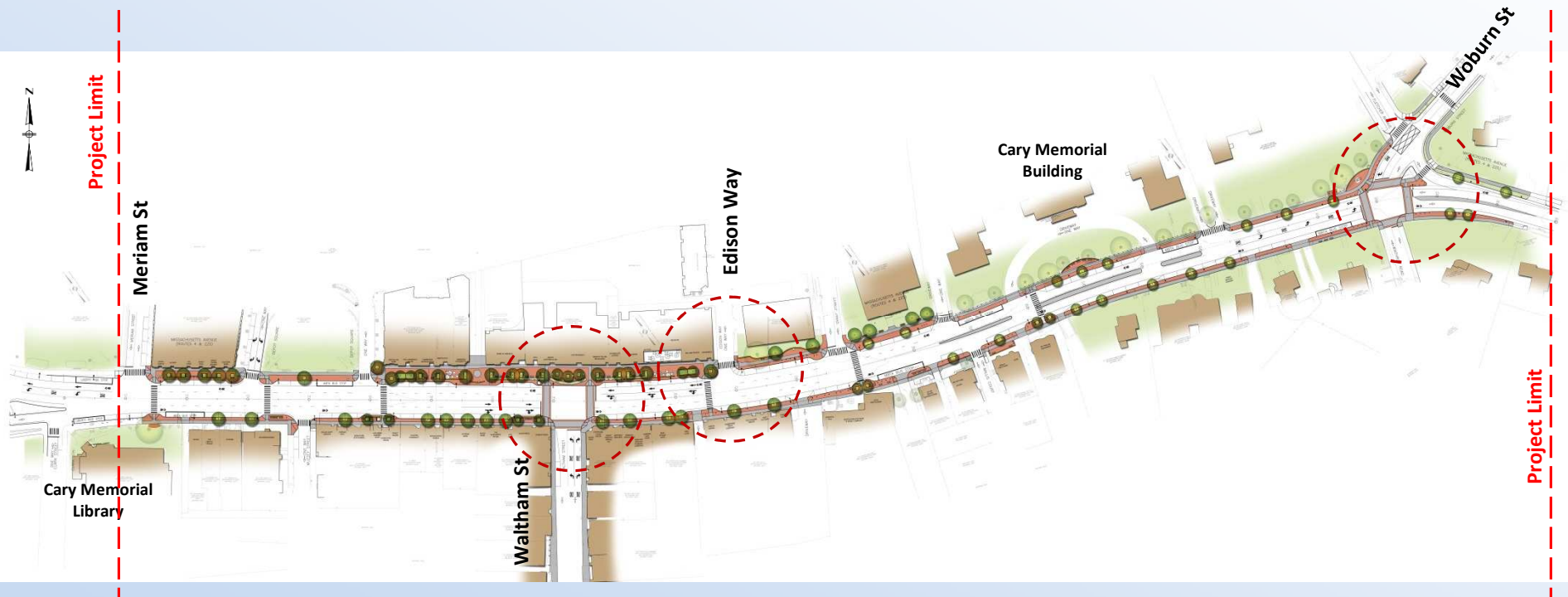
Design Option	Option 1 (Maintain Existing Road Configuration)	Option 2 (Modify Geometry, No Signal)	Option 3 (Modify Geometry, Traffic Signal)
1. Overall Safety	-	+	++
2. Pedestrian Crossing	-	+	++
3. Traffic Calming	-	+	++
4. Level of Operation (Delays/ LOS)	-	--	+
5. Appearance	-	++	+
6. Gateway	-	+	++
7. Winthrop Rd.	-	+	+
8. Bicycle Accommodation	-	--	+

Legend

- Negative
- + Positive

Note: Options 4, 5, 6, and 7 are not viable.

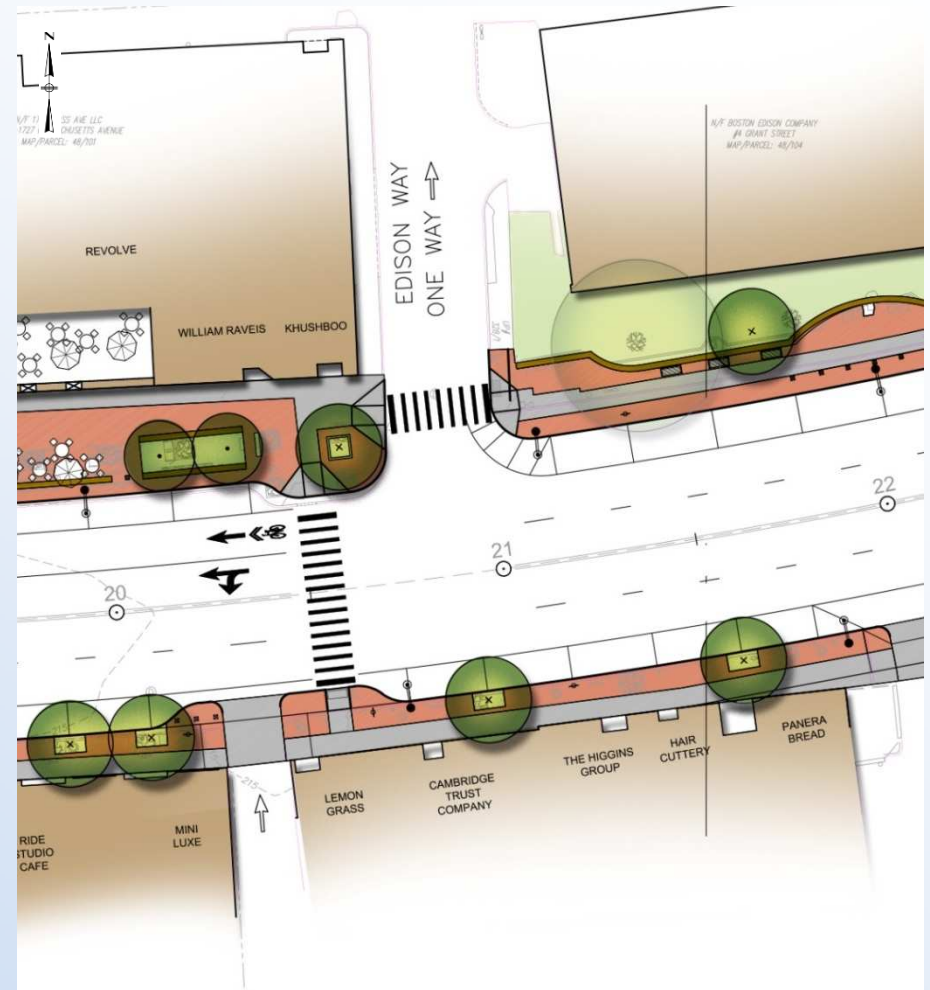
Intersection Locations



Massachusetts Avenue / Edison Way

Mass Ave. Westbound Right Turn Lane Removal

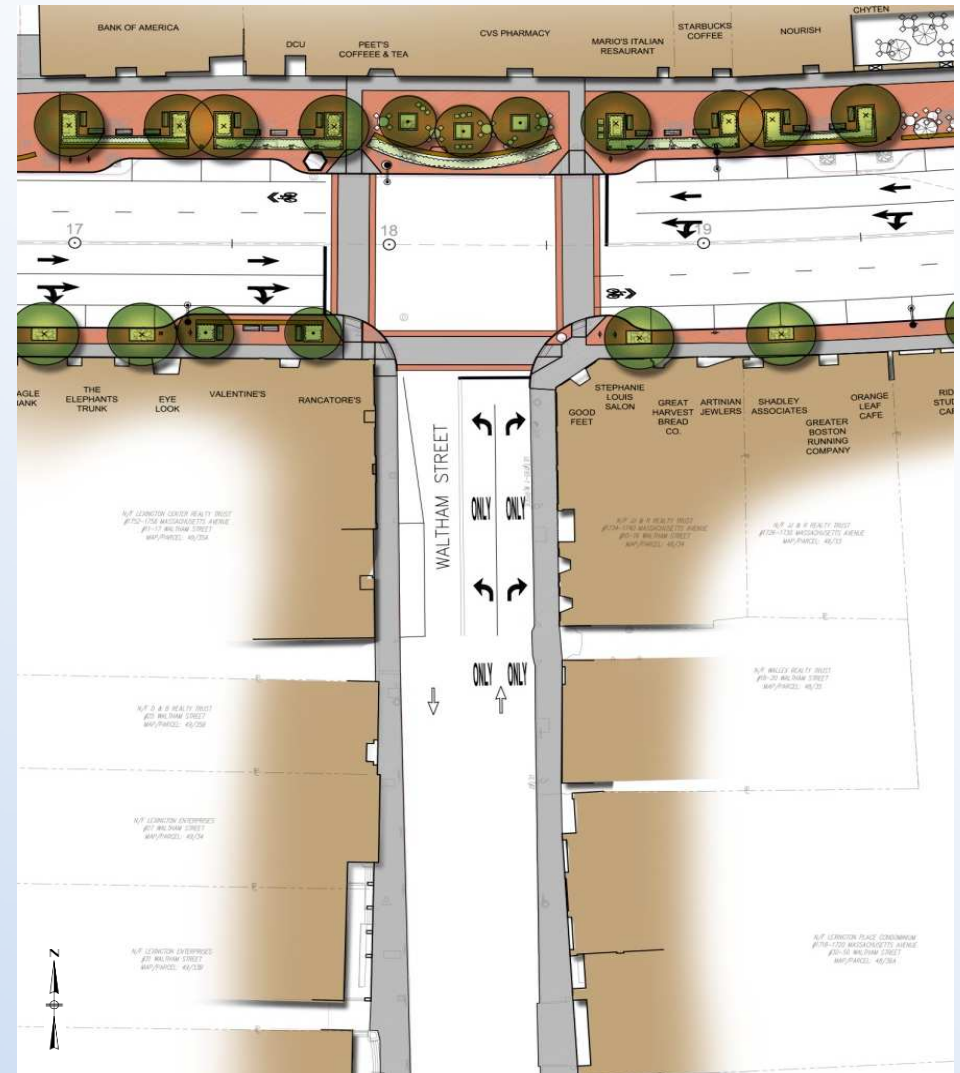
- Maintain overall traffic operational LOS
- Pedestrian Safety (Bump-outs)
 - Shorter crosswalks
 - Wider sidewalk
 - Better sightlines
- Bicycle Accommodation
 - Shared use lane
- Provide Traffic Calming
 - Slow turning vehicle speed
- Parking management flexibility



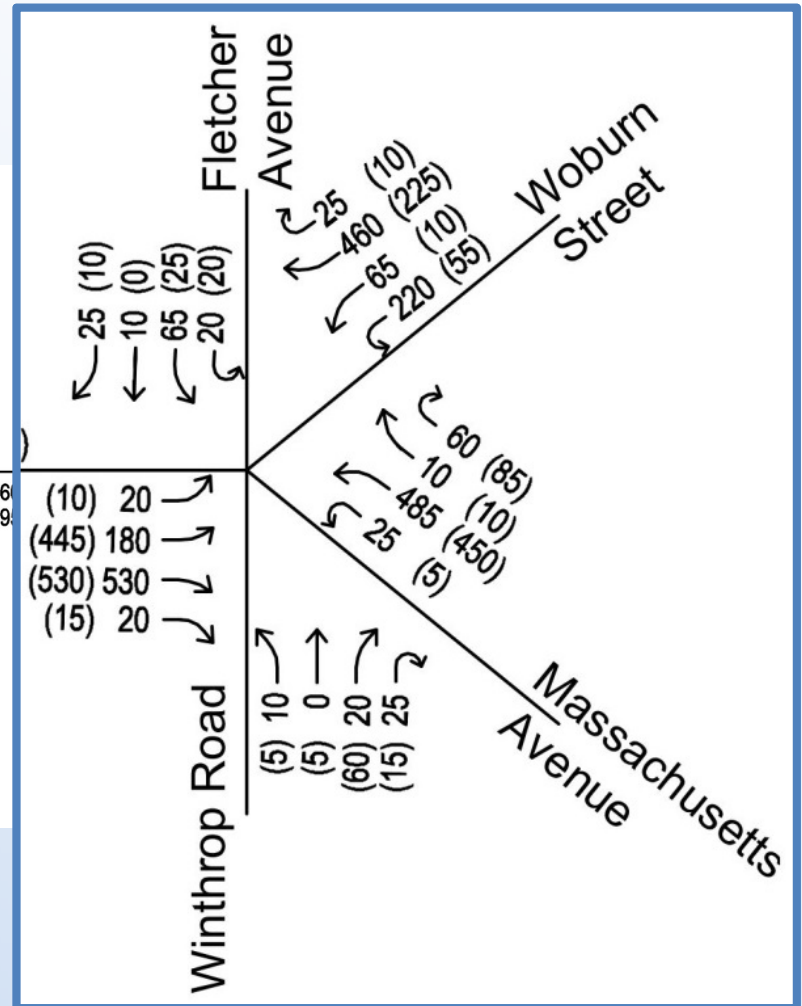
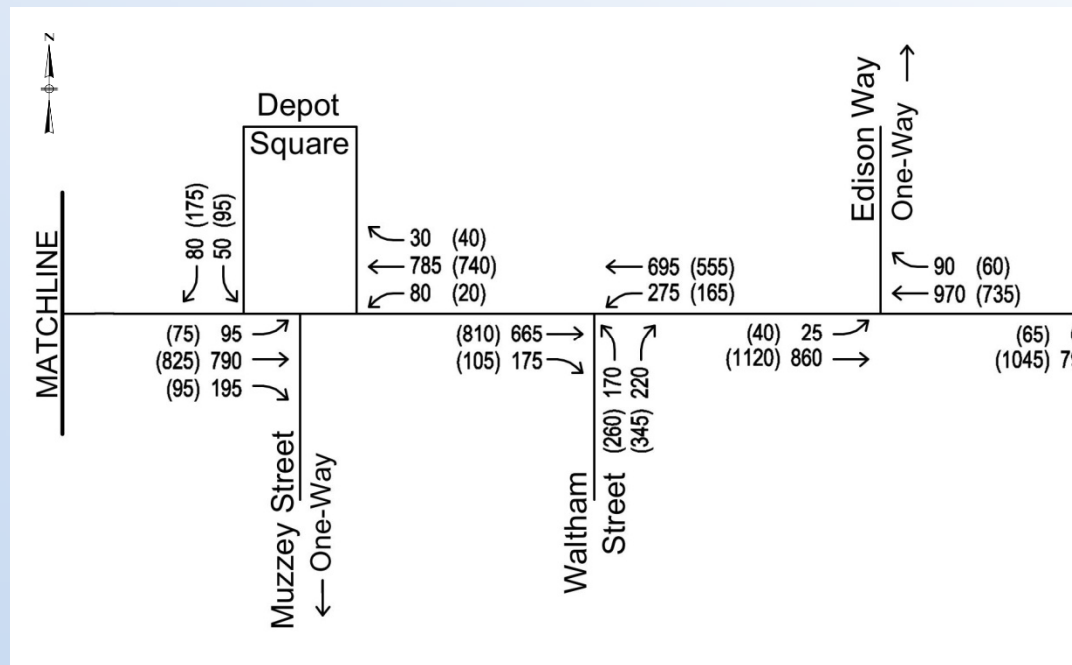
Massachusetts Avenue / Waltham Street

Mass Ave Eastbound Right Turn Lane Removal

- Maintain overall traffic operational LOS
- Pedestrian Safety (Bump-outs)
 - Shorter crosswalks
 - Wider sidewalk
 - Better sightlines
- Bicycle Accommodation
 - Shared use lane
- Provide Traffic Calming
 - Slow turning vehicle speed
- Parking management flexibility



Existing Turning Movement Counts



Project Meeting List

NUMBER	DATE	PURPOSE	NUMBER	DATE	PURPOSE
1	1/30/2013	Preliminary Project Meeting	21	3/11/2014	Pre-BOS meeting with Town Manger
2	3/25/2013	Kick Off MTG	22	3/12/2014	Streetscape Committee (Lighting)
3	4/10/2013	Tourism and Battlegreen Committee, Historic Society	23	3/12/2014	Property Owners Meeting
4	4/17/2013	Chamber of Commerce at the Depot	24	3/17/2014	Board of Selectmen Presentation
5	5/21/2013	Streetscape Committee (project update)	25	3/18/2014	Public Meeting
6	6/24/2013	Transportation Forum (DPW Office)	26	3/21/2014	Sharon Spaulding (Property Owner 1666 MassAve)
7	6/27/2013	Business Forum (Town Hall Office)	27	3/25/2014	Battle Green Abutters (The Sheedy & Tremblay)
8	8/8/2013	Center Committee Presentation	28	3/31/2014	Pam Lyons (MBTA Bus Locations)
9	9/24/2013	Debra Ryan (Accessibility)	29	6/13/2014	Streetscape Committee (project update)
10	9/30/2013	Streetscape Committee	30	7/10/2014	Lexington ADA Committee Rep with Deb Ryan
11	10/9/2013	Streetscape Committee (presentation)	31	8/15/2014	Selectmen update
12	11/25/2013	Streetscape Committee (project update)	32	9/10/2014	Streetscape Committee (project update/approach/BOS)
13	12/5/2013	Public Meeting Workshop	33	10/6/2014	BOS Meeting (Woburn and Mass Ave Signal)
14	12/18/2013	Streetscape Committee (debrief public workshop)	34	3/26/2015	Construction Phasing Meeting/Battle Green Kick-off
15	1/9/2014	Streetscape Committee (on Battlegreen)	35	5/5/2015	Cary Hall Memorial walkway w/ Architect (Don Mill)
16	1/9/2014	Lexington ADA Committee	36	5/6/2015	Woburn/Mass Ave Conference Call
17	1/28/2014	Battle Green Committee	37	5/11/2015	Woburn/Mass Ave BOS
18	2/14/2014	Coordination Meeting with Nelson Nygaard	38	6/8/2015	Woburn/Mass Ave Pre-Public Meeting
19	2/20/2014	Battle Green Committee	39	6/10/2015	Woburn/Mass Ave Public Meeting
20	2/28/2014	Tourism Committee			